SEQUENCE LISTING

<110> Milich, David R.
Billaud, Jean-Noel

<120> Rodent Hepatitis B Virus Core Proteins as Vaccine Platforms and Methods of Use Thereof

<130> VACCINE-07083

<140> 10/630,070
<141> 2003-07-30

<160> 101

<170> PatentIn version 3.2

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<213> Woodchuck hepatitis B virus

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Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
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Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu His Thr Val Ile Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser
145 150 155 160

Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro
165 170 175

Arg Arg Arg Arg Ser Gln Ser Pro Ser Ala Asn Cys
180 185

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<213> Woodchuck hepatitis B virus

<400> 2

Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser Pro Arg Arg Arg Thr
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Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
20 25 30

Gln Ser Pro Ser Ala Asn Cys
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<213> Woodchuck hepatitis B virus

<400> 3

Arg Arg Arg Cys
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<210> 4
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<400> 4

Arg Arg Arg Arg Cys
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<210> 5
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<400> 5

Lys Lys Lys Cys
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<213> Woodchuck hepatitis B virus

<400> 6

Ala Ala Ala Cys
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<210> 7
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<213> Woodchuck hepatitis B virus

<400> 7

Ala Ala Gly Gly Ala Arg Ala Ser Arg Ser Pro Ser Gln Ser Pro Ser
1 5 10 15

Gln Ser Pro Ser Ala Asn Cys
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<210> 8
<211> 21
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<213> Woodchuck hepatitis B virus

<400> 8

Ala Ala Gly Gly Ala Arg Ala Ser Arg Ser Gln Ser Pro Ser Gln Ser
1 5 10 15

Pro Ser Ala Asn Cys
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<210> 9
<211> 20
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<213> Woodchuck hepatitis B virus

<400> 9

Ala Ala Gly Gly Ala Arg Ala Ser Arg Ser Gln Ser Ser Gln Ser Pro
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Ser Ala Asn Cys
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<210> 10
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<213> Woodchuck hepatitis B virus

<400> 10

Ala Ala Gly Gly Ala Arg Ala Ser Arg Ser Gln Ser Ser Gln Ser Ser
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Ala Asn Cys

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<213> Woodchuck hepatitis B virus

<400> 11

Arg Arg Gly Gly Ala Arg Ala Ser Gln Ser Pro Ser Ala Asn Cys
1 5 10 15

<210> 12
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<400> 12

Ala Arg Gly Gly Ala Arg Ala Ser Gln Ser Pro Ser Ala Asn Cys
1 5 10 15

<210> 13
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<213> Woodchuck hepatitis B virus

<400> 13

Arg Ala Gly Gly Ala Arg Ala Ser Gln Ser Pro Ser Ala Asn Cys
1 5 10 15

<210> 14
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<213> Woodchuck hepatitis B virus

<400> 14

Ala Ala Gly Gly Ala Arg Ala Ser Gln Ser Pro Ser Ala Asn Cys
1 5 10 15

<210> 15
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<213> Woodchuck hepatitis B virus

<400> 15

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Arg Glu Ser
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Gln Cys

<210> 16
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<213> Woodchuck hepatitis B virus

<400> 16

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Pro Ser Ala
1 5 10 15

Asn Cys

<210> 17
<211> 17
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<213> Woodchuck hepatitis B virus

<400> 17

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Ser Ala Asn
1 5 10 15

Cys

<210> 18
<211> 15
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<213> Woodchuck hepatitis B virus

<400> 18

Ala Ala Gly Arg Ser Gln Ser Pro Ser Gln Ser Ser Ala Asn Cys
1 5 10 15

<210> 19
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<213> Woodchuck hepatitis B virus

<400> 19

Ala Ala Gly Arg Ser Pro Ser Gln Ser Ser Gln Ser Ser Ala Asn Cys
1 5 10 15

<210> 20
<211> 14
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<213> Woodchuck hepatitis B virus

<400> 20

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Ser Ala Asn Cys
1 5 10

<210> 21
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<212> PRT
<213> Woodchuck hepatitis B virus

<400> 21

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1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
20 25 30

Thr Ala Ala Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Glu Glu
50 55 60

Leu Thr Arg Leu Ile Thr Trp Met Ser Glu Asn Thr Thr Glu Glu Val
65 70 75 80

Arg Arg Ile Ile Val Asp His Val Asn Asn Thr Trp Gly Leu Lys Val
85 90 95

Arg Gln Thr Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln His
100 105 110

Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro
115 120 125

Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu
130 135 140

His Thr Val Ile Arg Arg Arg Gly Gly Ser Arg Ala Ala Arg Ser Pro
145 150 155 160

Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg
165 170 175

Arg Arg Arg Ser Gln Ser Pro Ala Ser Asn Cys
180 185

<210> 22
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<213> Ground squirrel hepatitis virus

<400> 22

Arg Arg Arg Gly Gly Ser Arg Ala Ala Arg Ser Pro Arg Arg Arg Thr
1 5 10 15

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
20 25 30

Gln Ser Pro Ala Ser Asn Cys
35

<210> 23
<211> 23
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<213> Ground squirrel hepatitis virus

<400> 23

Ala Ala Gly Gly Ser Arg Ala Ala Arg Ser Pro Ser Gln Ser Pro Ser
1 5 10 15

Gln Ser Pro Ala Ser Asn Cys
20

<210> 24
<211> 21
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<213> Ground squirrel hepatitis virus

<400> 24

Ala Ala Gly Gly Ser Arg Ala Ala Arg Ser Gln Ser Pro Ser Gln Ser
1 5 10 15

Pro Ala Ser Asn Cys
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<210> 25
<211> 20
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 25

Ala Ala Gly Gly Ser Arg Ala Ala Arg Ser Gln Ser Ser Gln Ser Pro
1 5 10 15

Ala Ser Asn Cys
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<210> 26
<211> 19
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 26

Ala Ala Gly Gly Ser Arg Ala Ala Arg Ser Gln Ser Ser Gln Ser Ala
1 5 10 15

Ser Asn Cys

<210> 27
<211> 15
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 27

Arg Arg Gly Gly Ser Arg Ala Ala Gln Ser Pro Ala Ser Asn Cys
1 5 10 15

<210> 28
<211> 15
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 28

Ala Arg Gly Gly Ser Arg Ala Ser Gln Ser Pro Ala Ser Asn Cys
1 5 10 15

<210> 29
<211> 15
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 29

Arg Ala Gly Gly Ser Arg Ala Ser Gln Ser Pro Ala Ser Asn Cys
1 5 10 15

<210> 30
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<212> PRT
<213> Ground squirrel hepatitis virus

<400> 30

Ala Ala Gly Gly Ser Arg Ala Ser Gln Ser Pro Ala Ser Asn Cys
1 5 10 15

<210> 31
<211> 18
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 31

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Arg Glu Ser
1 5 10 15

Gln Cys

<210> 32
<211> 18
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 32

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Pro Ala Ser
1 5 10 15

Asn Cys

<210> 33
<211> 17
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 33

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Ala Ser Asn
1 5 10 15

Cys

<210> 34
<211> 15
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 34

Ala Ala Gly Arg Ser Gln Ser Pro Ser Gln Ser Ala Ser Asn Cys
1 5 10 15

<210> 35
<211> 16
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 35

Ala Ala Gly Arg Ser Pro Ser Gln Ser Ser Gln Ser Ala Ser Asn Cys
1 5 10 15

<210> 36
<211> 14
<212> PRT
<213> Ground squirrel hepatitis virus

<400> 36

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Ala Ser Asn Cys
1 5 10

<210> 37
<211> 567
<212> DNA
<213> Woodchuck hepatitis B virus

<400> 37
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ttggacttct ttcctgacct taatgctttg gtggacactg ctactgcctt gtatgaagaa 120

gagctaacag gtagggaaca ttgctctccg caccatacag ctattagaca agctttagta 180

tgctgggatg aattaactaa attgatagct tggatgagct ctaacataac ttctgaacaa 240

gtaagaacaa tcattgtaaa tcatgtcaat gatacctggg gacttaaggt gagacaaagt 300

ttatggtttc atttgtcatg tctcactttc ggacaacata cagttcaaga atttttagta 360

agttttggag tatggatcag gactccagct ccatatagac ctcctaatgc acccattctc 420

tcgactcttc cggaacatac agtcattagg agaagaggag gtgcaagagc ttctaggtcc 480

cccagaagac gcactccctc tcctcgcagg agaagatctc aatcaccgcg tcgcagacgc 540

tctcaatctc catctgccaa ctgctga 567

<210> 38
<211> 149
<212> PRT
<213> Woodchuck hepatitis B virus

<400> 38

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu
50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln
65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys
85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln
100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

Glu His Thr Val Ile
145

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<211> 564
<212> DNA
<213> Woodchuck hepatitis B virus

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gaattaacag gtagggagca ttgttctcct catcatactg ctattagaca ggccttagtg 180

tgttgggaag aattaactag attaattaca tggatgagtg aaaatacaac agaagaagtt 240

agaagaatta ttgttgatca tgtcaataat acttggggac ttaaagtaag acagacttta 300

tggtttcatt tatcatgtct tacttttgga caacacacag ttcaagaatt tttggttagt 360

tttggagtat ggattagaac tccagctcct tatagaccac ctaatgcacc cattttatca 420

actcttccgg aacatacagt cattaggaga agaggaggtt caagagctgc taggtccccc 480

cgaagacgca ctcctctcc tcgcaggaga aggtctcaat caccgcgtcg cagacgctct 540

caatctccag cttccaactg ctga 564

<210> 40
<211> 148
<212> PRT
<213> Woodchuck hepatitis B virus

<400> 40

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu
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Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp
20 25 30

Thr Ala Ala Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Glu Glu
50 55 60

Leu Thr Arg Leu Ile Thr Trp Met Ser Glu Asn Thr Thr Glu Glu Val
65 70 75 80

Arg Arg Ile Ile Val Asp His Val Asn Asn Thr Trp Gly Leu Lys Val
85 90 95

Arg Gln Thr Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln His
100 105 110

Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro
115 120 125

Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu
130 135 140

His Thr Val Ile
145

<210> 41
<211> 183
<212> PRT
<213> Woodchuck hepatitis B virus

<400> 41

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
50 55 60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala
65 70 75 80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys
85 90 95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
100 105 110

Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
130 135 140

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Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr
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Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser
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Gln Ser Arg Glu Ser Gln Cys
            180
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<210> 42
<211> 34
<212> PRT
<213> Homo sapiens

<400> 42

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Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg
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Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser Gln Ser Arg Glu Ser
            20                  25                  30

Gln Cys
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<210> 43
<211> 18
<212> PRT
<213> Homo sapiens

<400> 43

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Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Arg Glu Ser
1               5                   10                  15

Gln Cys
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<210> 44
<211> 16
<212> PRT
<213> Homo sapiens

<400> 44

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Ala Ala Gly Arg Ser Gln Ser Pro Ser Gln Ser Arg Glu Ser Gln Cys
1               5                   10                  15
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<210> 45
<211> 15
<212> PRT
<213> Homo sapiens

<400> 45

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Arg Glu Ser Gln Cys
1 5 10 15

<210> 46
<211> 14
<212> PRT
<213> Homo sapiens

<400> 46

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Glu Ser Gln Cys
1 5 10

<210> 47
<211> 11
<212> PRT
<213> Homo sapiens

<400> 47

Arg Arg Gly Ser Gln Ser Arg Glu Ser Gln Cys
1 5 10

<210> 48
<211> 11
<212> PRT
<213> Homo sapiens

<400> 48

Ala Arg Gly Ser Gln Ser Arg Glu Ser Gln Cys
1 5 10

<210> 49
<211> 11
<212> PRT
<213> Homo sapiens

<400> 49

Arg Ala Gly Ser Gln Ser Arg Glu Ser Gln Cys
1 5 10

<210> 50
<211> 11
<212> PRT
<213> Homo sapiens

<400> 50

Ala Ala Gly Ser Gln Ser Arg Glu Ser Gln Cys
1 5 10

<210> 51
<211> 18
<212> PRT
<213> Homo sapiens

<400> 51

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Pro Ser Ala
1 5 10 15

Asn Cys

<210> 52
<211> 18
<212> PRT
<213> Homo sapiens

<400> 52

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Arg Glu Ser
1 5 10 15

Gln Cys

<210> 53
<211> 17
<212> PRT
<213> Homo sapiens

<400> 53

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Glu Ser Gln
1 5 10 15

Cys

<210> 54
<211> 15
<212> PRT
<213> Homo sapiens

<400> 54

Ala Ala Gly Arg Ser Gln Ser Pro Ser Gln Ser Glu Ser Gln Cys
1 5 10 15

<210> 55
<211> 16
<212> PRT
<213> Homo sapiens

<400> 55

Ala Ala Gly Arg Ser Pro Ser Gln Ser Ser Gln Ser Glu Ser Gln Cys
1 5 10 15

<210> 56
<211> 14
<212> PRT
<213> Homo sapiens

<400> 56

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Glu Ser Gln Cys
1 5 10

<210> 57
<211> 552
<212> DNA
<213> Woodchuck hepatitis B virus

<400> 57
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tctgacttct ttccttcagt acgagatctt ctagataccg cctcagctct gtatcgggaa 120

gccttagagt ctcctgagca ttgttcacct caccatactg cactcaggca agcaattctt 180

tgctgggggg aactaatgac tctagctacc tgggtgggtg ttaatttgga agatccagca 240

tccagagacc tagtagtcag ttatgtcaac actaatatgg gcctaaagtt caggcaactc 300

ttgtggtttc acatttcttg tctcactttt ggaagagaaa ccgttataga gtatttggtg 360

tctttcggag tgtggattcg cactcctcca gcttatagac caccaaatgc ccctatccta 420

tcaacacttc cggaaactac tgttgttaga cgacgaggca ggtcccctag aagaagaact 480

ccctcgcctc gcagacgaag gtctcaatcg ccgcgtcgca gaagatctca atctcgggaa 540

tctcaatgtt ga 552

<210> 58
<211> 149
<212> PRT
<213> Woodchuck hepatitis B virus

<400> 58

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Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu
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Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp
            20                  25                  30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys
        35                  40                  45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu
    50                  55                  60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala
65                  70                  75                  80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys
                85                  90                  95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg
            100                 105                 110

Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr
        115                 120                 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro
    130                 135                 140

Glu Thr Thr Val Val
145
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<210> 59
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 59

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Val Ser Phe Gly Val Trp Ile Arg Thr Pro Ala Pro
1               5                  10
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<210> 60
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 60

Val Ser Phe Gly Val Trp Ile Arg Thr Pro Pro Ala
1 5 10

<210> 61
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 61

Val Cys Trp Asp Glu Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn
1 5 10 15

Ile Thr Ser Glu Gln
20

<210> 62
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 62

Leu Cys Trp Gly Glu Leu Met Thr Leu Ala Thr Trp Val Gly Gly Asn
1 5 10 15

Leu Glu Asp Pro Ile
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<210> 63
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 63
ggaaattctt ctcctcgag 19

<210> 64
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 64

Met Ser Leu Leu Thr Glu Val Glu Thr Pro Ile Arg Asn Glu Trp Gly
1 5 10 15

Cys Arg Cys Asn Asp Ser Ser Asp
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<210> 65
<211> 18
<212> PRT
<213> Plasmodium vivax

<400> 65

Ala Asn Gly Ala Gly Asn Gln Pro Gly Ala Asn Gly Ala Gly Asp Gln
1 5 10 15

Pro Gly

<210> 66
<211> 18
<212> PRT
<213> Plasmodium vivax

<400> 66

Ala Asn Gly Ala Asp Asn Gln Pro Gly Ala Asn Gly Ala Asp Asp Gln
1 5 10 15

Pro Gly

<210> 67
<211> 22
<212> PRT
<213> Plasmodium vivax

<400> 67

Ala Pro Gly Ala Asn Gln Glu Gly Gly Ala Ala Ala Pro Gly Ala Asn
1 5 10 15

Gln Glu Gly Gly Ala Ala
20

<210> 68
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 68

Asn Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro
1 5 10

<210> 69
<211> 260
<212> PRT
<213> Mus musculus

<400> 69

Met Ile Glu Thr Tyr Ser Gln Pro Ser Pro Arg Ser Val Ala Thr Gly
1 5 10 15

Leu Pro Ala Ser Met Lys Ile Phe Met Tyr Leu Leu Thr Val Phe Leu
20 25 30

Ile Thr Gln Met Ile Gly Ser Val Leu Phe Ala Val Tyr Leu His Arg
35 40 45

Arg Leu Asp Lys Val Glu Glu Glu Val Asn Leu His Glu Asp Phe Val
50 55 60

Phe Ile Lys Lys Leu Lys Arg Cys Asn Lys Gly Glu Gly Ser Leu Ser
65 70 75 80

Leu Leu Asn Cys Glu Glu Met Arg Arg Gln Phe Glu Asp Leu Val Lys
85 90 95

Asp Ile Thr Leu Asn Lys Glu Glu Lys Lys Glu Asn Ser Phe Glu Met
100 105 110

Gln Arg Gly Asp Glu Asp Pro Gln Ile Ala Ala His Val Val Ser Glu
115 120 125

Ala Asn Ser Asn Ala Ala Ser Val Leu Gln Trp Ala Lys Lys Gly Tyr
130 135 140

Tyr Thr Met Lys Ser Asn Leu Val Met Leu Glu Asn Gly Lys Gln Leu
145 150 155 160

Thr Val Lys Arg Glu Gly Leu Tyr Tyr Val Tyr Thr Gln Val Thr Phe
165 170 175

Cys Ser Asn Arg Glu Pro Ser Ser Gln Arg Pro Phe Ile Val Gly Leu
180 185 190

Trp Leu Lys Pro Ser Ser Gly Ser Glu Arg Ile Leu Leu Lys Ala Ala
195 200 205

Asn Thr His Ser Ser Ser Gln Leu Cys Glu Gln Gln Ser Val His Leu
210 215 220

Gly Gly Val Phe Glu Leu Gln Ala Gly Ala Ser Val Phe Val Asn Val
225 230 235 240

Thr Glu Ala Ser Gln Val Ile His Arg Val Gly Phe Ser Ser Phe Gly
245 250 255

Leu Leu Lys Leu
260

<210> 70
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 70

Gly Glu Ile Lys Asn Cys Ser Phe Asn Ile Ser Thr Ser Ile Arg Gly
1 5 10 15

Lys Val Gln Lys Glu Tyr Ala Phe Phe
20 25

<210> 71
<211> 26
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 71

Leu Thr Ser Cys Asn Thr Ser Val Ile Thr Gln Ala Cys Pro Lys Val
1 5 10 15

Ser Phe Glu Pro Ile Pro Ile His Tyr Cys
20 25

<210> 72
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 72

Pro Lys Val Ser Phe Glu Pro Ile Pro Ile His Tyr Cys Ala Pro Ala
1 5 10 15

Gly Phe Ala Ile Leu Lys Cys Asn Asn
20 25

<210> 73
<211> 22
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 73

Thr His Gly Ile Arg Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly
1 5 10 15

Ser Leu Ala Glu Glu Glu
20

<210> 74
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 74

Asp Arg Ala Ala Gly Gln Pro Ala Gly Asp Arg Ala Asp Gly Gln Pro
1 5 10 15

Ala Gly

<210> 75
<211> 20
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 75

Asn Ala Asn Pro Asn Val Asp Pro Asn Ala Asn Pro Asn Ala Asn Pro
1 5 10 15

Asn Ala Asn Pro
20

<210> 76
<211> 23
<212> PRT
<213> Artificial Sequence

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Arg Cys Asn Asp Ser Ser Asp
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Lys Lys Lys Val Thr Ala Gln Glu Leu Asp
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Phe Arg His Asp Ser Gly Tyr
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Asp Thr Gly Phe Leu Ala Ala Leu
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Tyr Cys Phe Thr Pro Ser Pro Val
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Cys Phe Arg Lys His Pro Glu Ala
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Glu Ala Thr Tyr Ser Arg Cys Gly
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His Leu His Gln Asn Ile Val Asp
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Leu Ala Gln Lys Val Ala Arg Thr Leu Phe
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Thr Ala Val Val His Gln Leu Lys Arg Lys His
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Leu Met Arg Ser Thr Thr Lys
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Leu Glu Ala

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Asp Pro Pro Pro Pro Asn Pro Asn Asp Pro Pro Pro Pro Asn Pro Asn
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1 5 10 15